

Appl. No. 10/605,015  
Amdt. dated October 31, 2005  
Reply to Office action of August 02, 2005

**Amendments to the Claims:**

This listing of claims will replace all prior version, and listings, of claims in the application.

**5    Listing of Claims:**

Claim 1 (currently amended): A capacitor structure comprising:

- a substrate;
- a first conductive layer disposed on the substrate;
- a first insulating layer disposed on the first conductive layer;
- 10    a second conductive layer disposed on portions of the first insulating layer;
- a second insulating layer disposed on portions of the second conductive layer and the first insulating layer;
- a third conductive layer disposed on portions of the second insulating layer and electrically connecting to the first conductive layer through at least one first contact hole, the first contact hole being adjacent to the second conductive layer;
- 15    a third insulating layer disposed on the third conductive layer and the second insulating layer; and
- 20    a fourth conductive layer disposed on the third insulating layer and electrically connecting to the second conductive layer through at least one second contact hole and a fifth conductive layer, wherein the capacitor structure electrically connecting to a thin film transistor (TFT) and the first conductive layer disconnecting
- 25    to a gate of the TFT in a display.

Claim 2 (original): The structure of claim 1 wherein the substrate comprises a glass substrate, a quartz substrate, or a plastic substrate.

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Claim 3 (original): The structure of claim 1 wherein the first conductive layer is a polysilicon layer.

5 Claim 4 (currently amended): The structure of claim 1 wherein the first insulating layer comprises a silicon oxide layer ~~(SiO<sub>x</sub> layer, where  $0 < x < 2.0$ )~~, a silicon nitride layer ~~(SiN<sub>y</sub> layer, where  $0 < y < 1.33$ )~~, or a silicon oxynitride layer ~~(SiO<sub>x</sub>N<sub>y</sub> layer, where  $0 < x < 2.0$ ,  $0 < y < 1.33$ )~~.

10 Claim 5 (original): The structure of claim 1 wherein both of the second conductive layer and the third conductive layer comprise a metal layer, an alloy layer, or a metal multi-layer.

Claim 6 (original): The structure of claim 5 wherein the metal layer  
15 comprises a tungsten layer (W layer), a chrome layer (Cr layer), a titanium layer (Ti layer), an aluminum layer (Al layer), a niobium layer (Nb layer), or a molybdenum layer (Mo layer); the alloy layer comprises an aluminum-neodymium (AlNd) alloy, the metal multi-layer comprises a titanium/aluminum/titanium layer (Ti/Al/Ti layer), a  
20 molybdenum/aluminum/ molybdenum layer (Mo/Al/Mo layer), or a chrome/aluminum (Cr/Al layer).

Claim 7 (original): The structure of claim 1 wherein the fifth conductive layer is disposed in the second contact hole to electrically connect the  
25 fourth conductive layer and the second conductive layer.

Claim 8 (original): The structure of claim 7 wherein the third conductive layer and the fifth conductive layer are not connected.

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Claim 9 (currently amended): The structure of claim 7 wherein the substrate is an array substrate of ~~[[a]] the liquid crystal display (LCD)~~, a pixel array area is included on a surface of the substrate, and the fourth  
5 conductive layer is electrically connected to ~~[[a]] the~~ thin film transistor (TFT) in the pixel array area through the fifth conductive layer.

Claim 10 (original): The structure of claim 9 wherein the capacitor structure is disposed in the pixel array area on the substrate to be used as a  
10 storage capacitor.

Claim 11 (currently amended): The structure of claim 1 wherein the substrate is an array substrate of ~~[[a]] the liquid crystal display (LCD)~~, a periphery circuit area is included on a surface of the substrate, and the  
15 capacitor structure is disposed in the periphery circuit area on the substrate.

Claim 12 (currently amended): The structure of claim 1 wherein the second insulating layer comprises a silicon oxide layer ~~(SiO<sub>x</sub> layer, where~~  
20 ~~0 < x < 2.0)~~, a silicon nitride layer ~~(SiN<sub>y</sub> layer, where 0 < y < 1.33)~~, or a silicon oxynitride layer ~~(SiO<sub>x</sub>N<sub>y</sub> layer, where 0 < x < 2.0, 0 < y < 1.33)~~.

Claim 13 (original): The structure of claim 1 wherein the first contact hole is disposed in the first insulating layer and the second insulating layer, and  
25 the first contact hole exposes portions of the first conductive layer.

Claim 14 (currently amended): The structure of claim 1 wherein the third insulating layer comprises a silicon oxide layer ~~(SiO<sub>x</sub> layer, where~~

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~~0 < x < 2.0), a silicon nitride layer (SiNy layer, where 0 < y < 1.33), or a silicon oxynitride layer (SiOxNy layer, where 0 < x < 2.0, 0 < y < 1.33).~~

Claim 15 (original): The structure of claim 1 wherein the fourth conductive  
5 layer comprises an indium tin oxide layer (ITO layer) or an indium zinc  
oxide layer (IZO layer).

Claim 16 (original): The structure of claim 1 wherein the second contact  
hole is disposed in the second insulating layer, and the second contact hole  
10 exposes portions of the second conductive layer.

Claim 17 (original): The structure of claim 1 wherein the first conductive  
layer, the first insulating layer, and the second conductive layer form a  
first capacitor; the second conductive layer, the second insulating layer,  
15 and the third conductive layer form a second capacitor; and the third  
conductive layer, the third insulating layer, and the fourth conductive layer  
form a third capacitor.

Claim 18 (original): The structure of claim 17 wherein the second  
20 conductive layer and the fourth conductive layer are used as a positive  
electrode of the capacitor, and the second conductive layer and the fourth  
conductive layer are electrically connected by the fifth conductive layer  
through the second contact hole; the first conductive layer and the third  
conductive layer are used as a negative electrode of the capacitor, and the  
25 first conductive layer and the third conductive layer are electrically  
connected through the first contact hole filled with the third conductive  
layer.

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Claim 19 (original): The structure of claim 17 utilizing multi-layered conductive layers as multi-layered electrode plates to form at least two stack capacitors.

- 5 Claim 20 (currently amended): The structure of claim 17 wherein ~~the capacitance~~ the capacitance value of the capacitor is equal to the capacitance value of an equivalent capacitor including the first capacitor, the second capacitor, and the third capacitor connected in parallel with one another.

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Claim 21 (new): The structure of claim 9, wherein the gate and the capacitor are in the pixel array area.